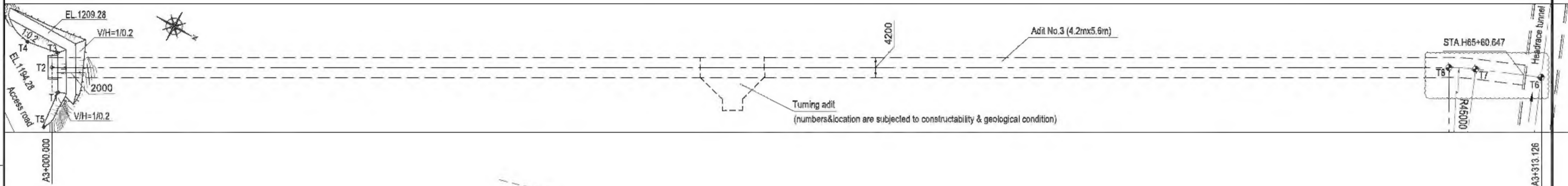


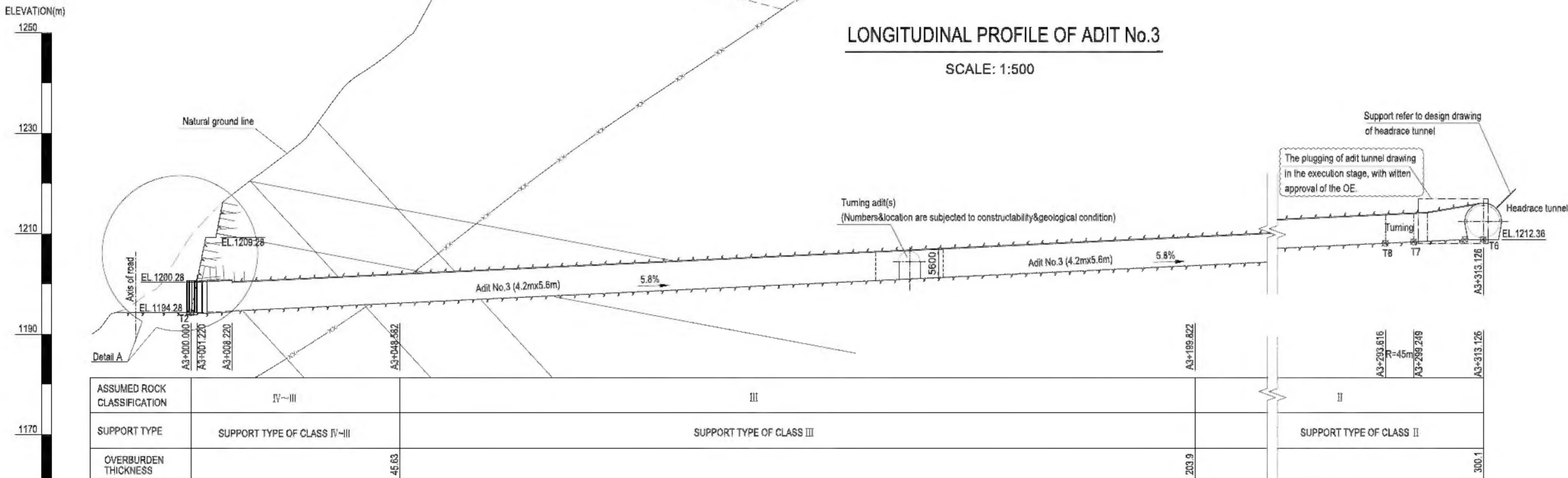
GENERAL PLAN LAYOUT OF ADIT NO.3

SCALE: 1:500



LONGITUDINAL PROFILE OF ADIT NO.3

SCALE: 1:500



ASSUMED ROCK CLASSIFICATION	IV~III	III	II
SUPPORT TYPE	SUPPORT TYPE OF CLASS IV~III	SUPPORT TYPE OF CLASS III	SUPPORT TYPE OF CLASS II
OVERBURDEN THICKNESS	46.63	203.9	300.1

Legend

- Gneiss
- Interbedded Mica Schist and Quartz-Schist
- Inferred boundary between moderately weathered and slight weathered
- Inferred lithology boundary
- Joint number and attitude (Dip direction/DIP)

Joint sets of adit No.3

ID	Occurrence	Remark
1	J15 280° ∠ 60°	
2	J16 40° ∠ 28°	
3	Foliation 290°~340° ∠ 15°~30°	

Control points

No.	Coordinates(m)		EL.(m)
	N(m)	E(m)	
T1	3108930.680	622312.158	1194.28
T2	3108927.093	622308.124	1194.28
T3	3108926.709	622304.867	1194.28
T4	3108920.051	622305.778	1194.28
T5	3108931.518	622319.961	1194.28
T6	3109203.900	622161.998	1213.36
T7	3109190.949	622166.980	-
T8	3109185.832	622169.326	-

1:500 0 5 10 15 20 25m

NOTE

- This set of drawings are excavation and initial support of No.3 adit.
- The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- These rock classes and length estimates in drawings are purely speculative, and all rock classes may be encountered.

REFERENCE DRAWINGS

UTI-C-150-CVL-DC-43002	Surrounding Rock Stability Evaluation of Adit No.3
UTI-C-000-CVL-DC-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UTI-C-845-CVL-DC-70005	Layout Drawing of Monitoring for Adit No.3
UTI-C-150-CVL-DC-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

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A	25.MAY. 2021	FIRST ISSUE	DONG Z.Z.	Lei Y.G.	Han J.B.	

PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NWEDC
NATIONAL WATER AND POWER DEVELOPMENT CORPORATION

OWNER'S ENGINEER
TRACTEBEL
jade CONSULT

CONTRACTOR
DOOSAN Doosan Heavy Industries & Construction

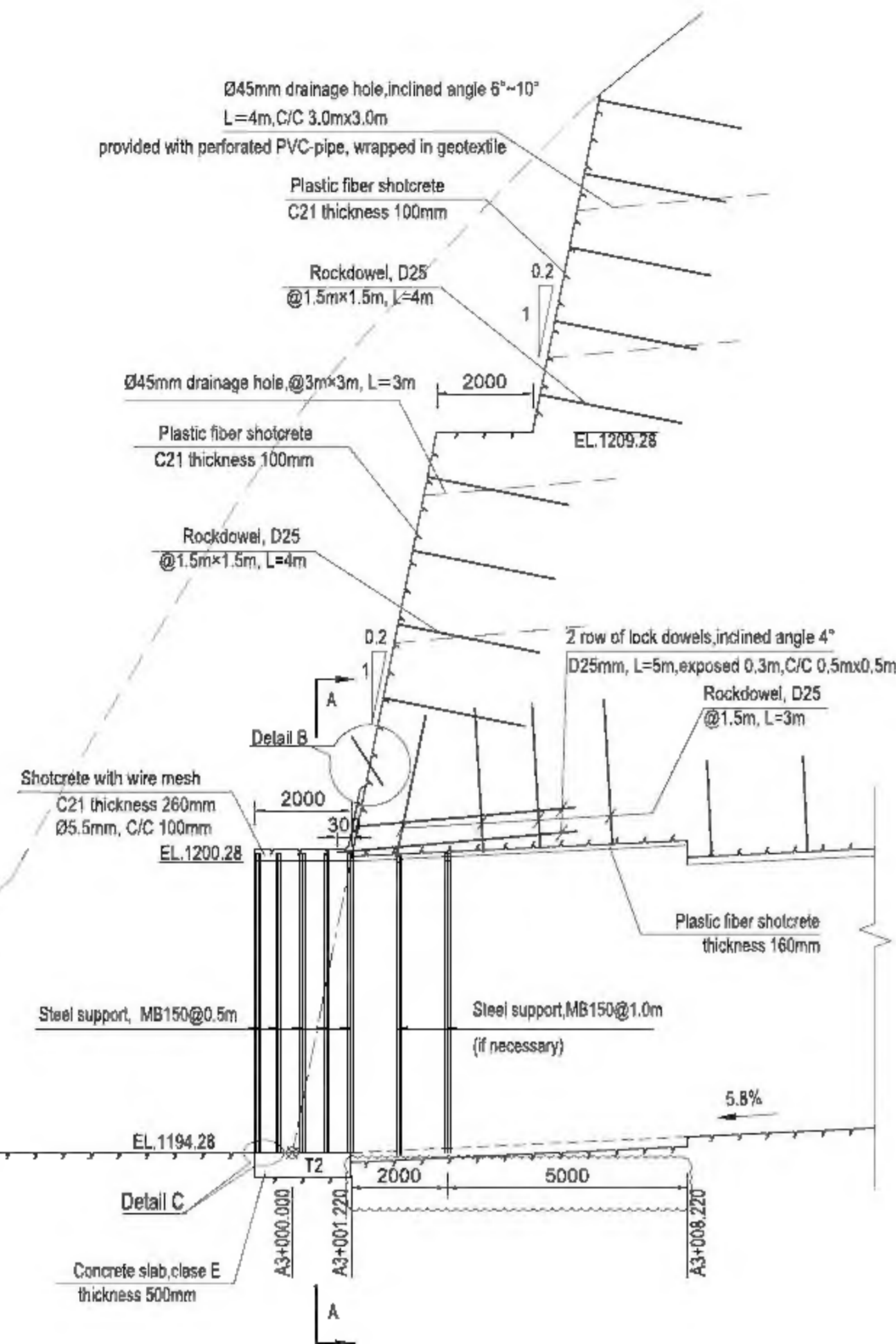
DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF ADIT NO.3 (1/5)

INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UTI-C-150-CVL-DC-43004-1	1 OF 5	G

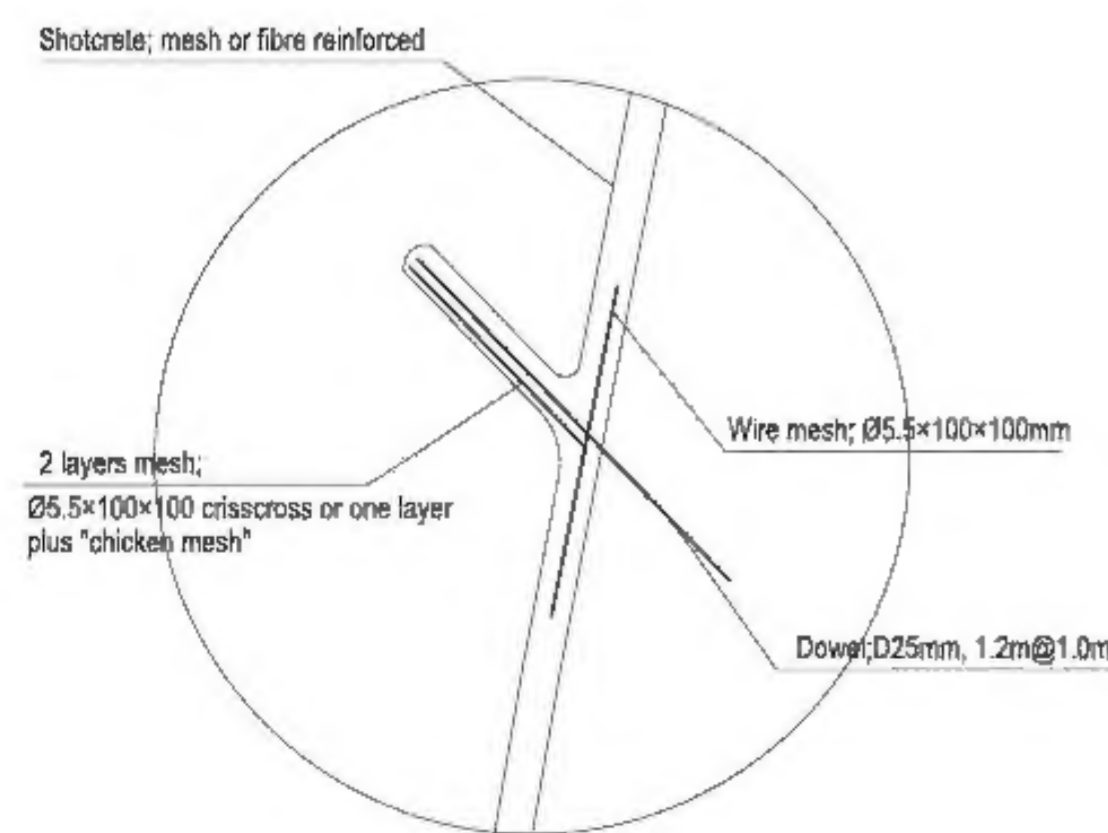
A1 (594 x 841 MM) 1

Detail A

SCALE: 1:100

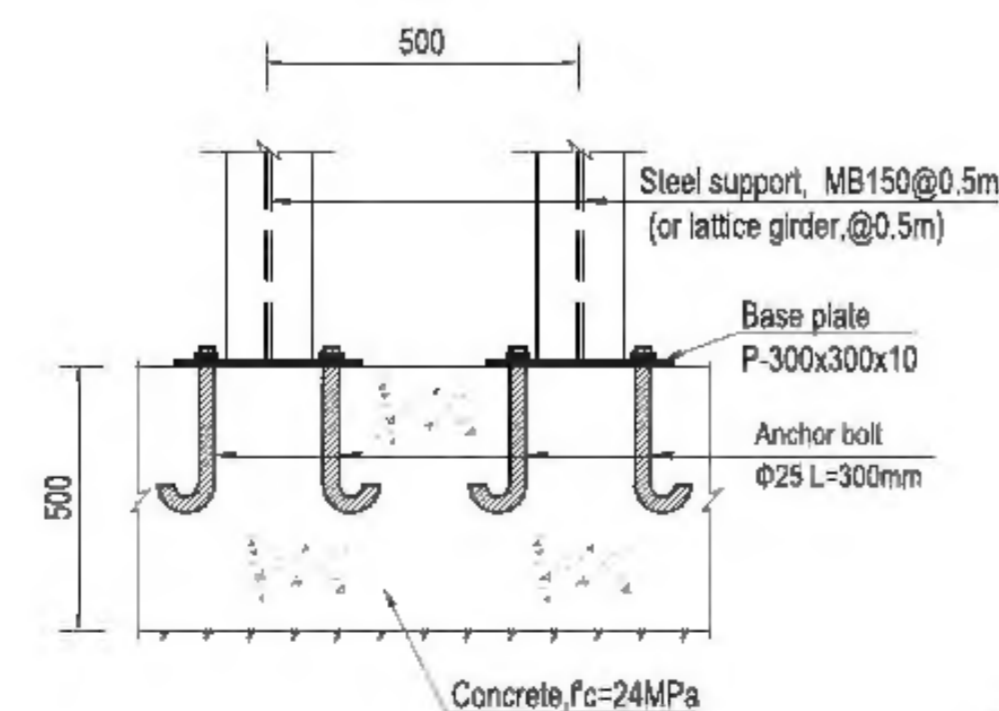


Detail B



DETAIL C

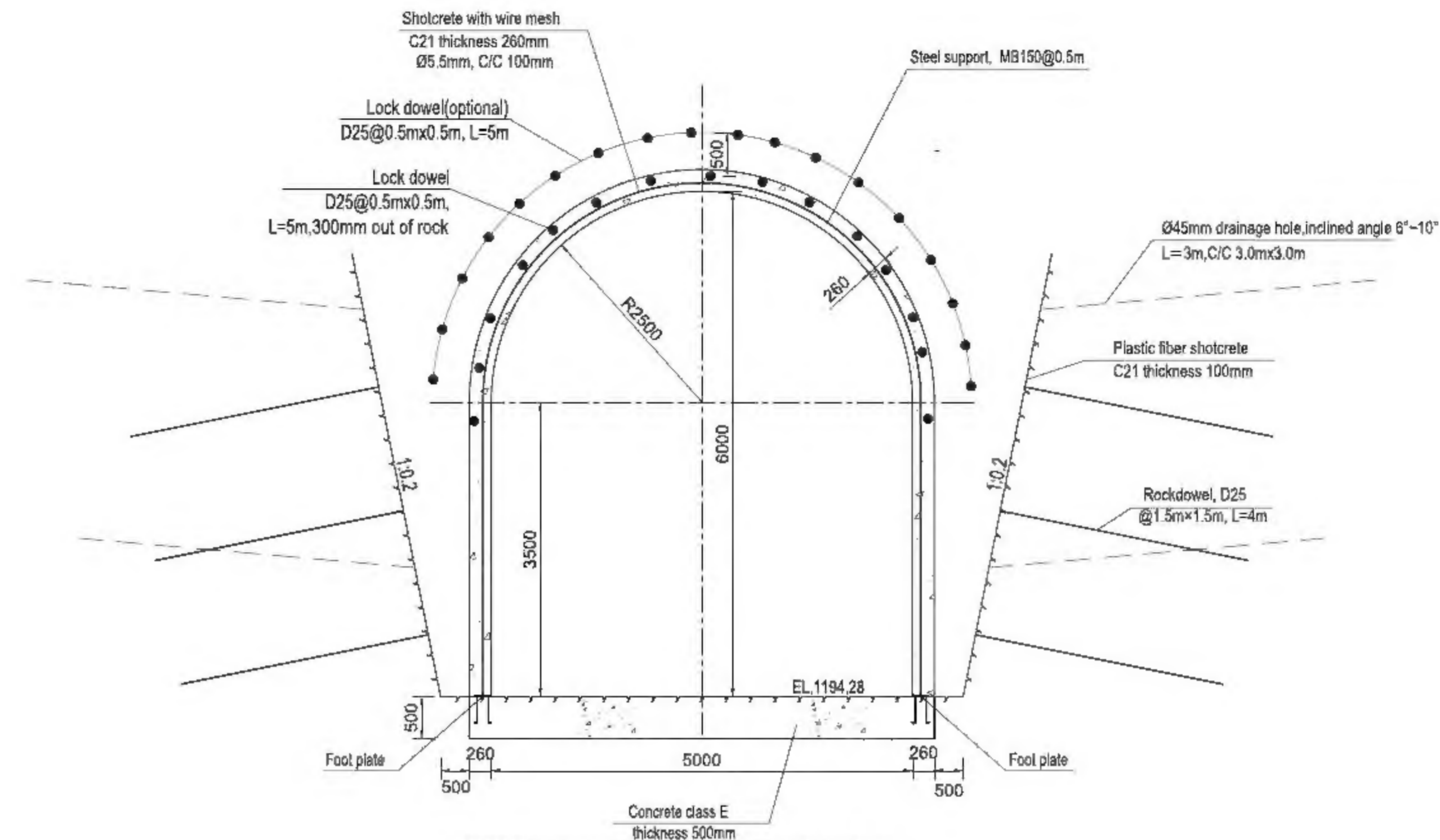
SCALE: 1:50



SCHEMATIC DIAGRAM OF OPEN TUNNEL

(SECTION A-A)

SCALE 1:50

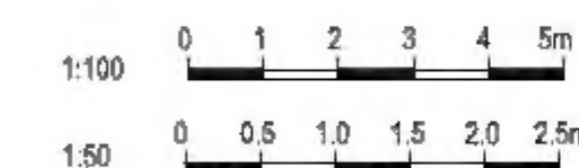
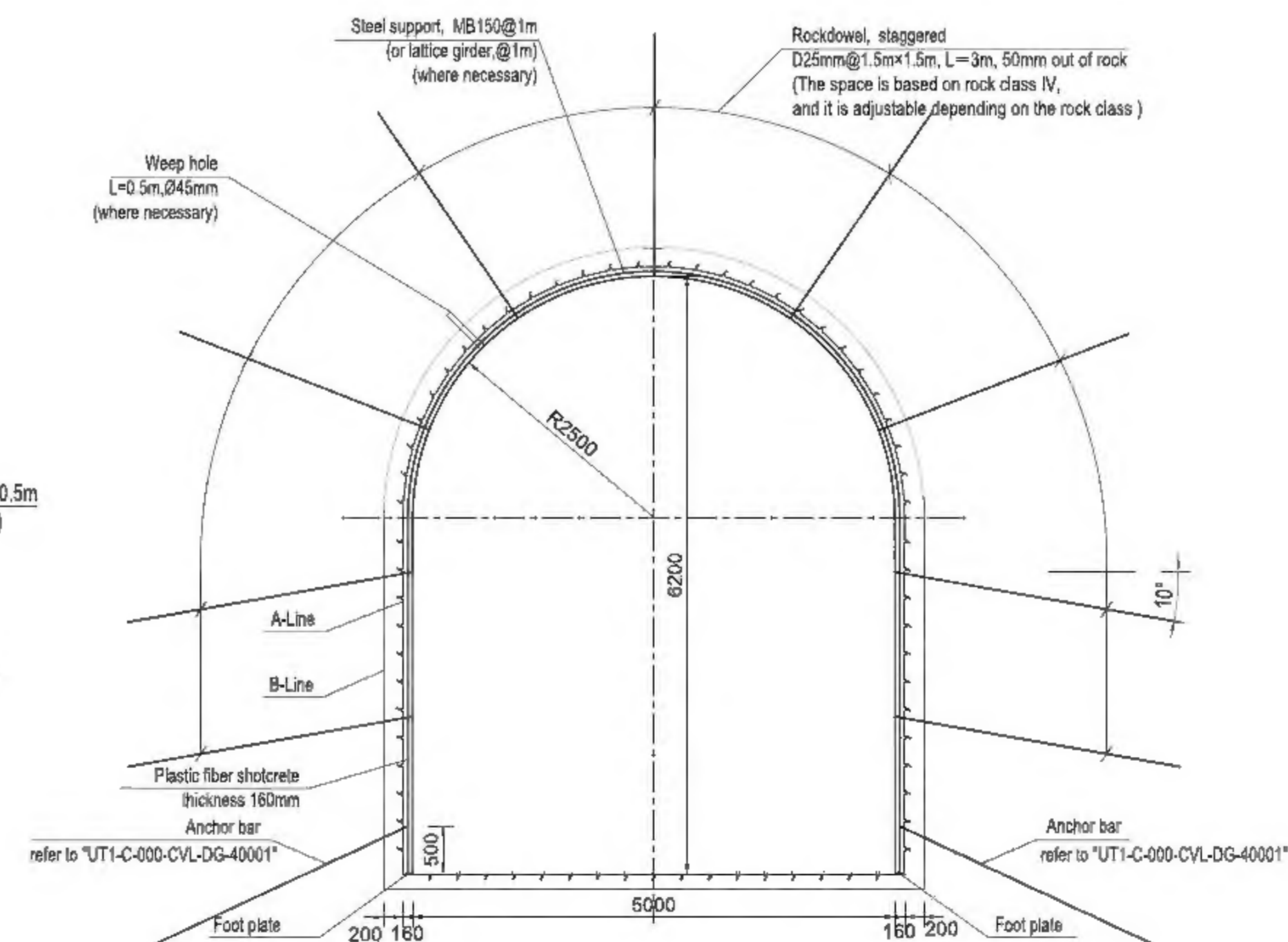


Note: C21 shotcrete of portal slope is applied refers to the early strength requirements as per contract.

SUPPORT TYPE OF TUNNEL ENTRANCE SECTION

(A3+001.220-A3+008.220)

SCALE 1:50



NOTE

- This set of drawings are the excavation and initial support of adit No.3.
- The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- Symbol description:
A-Line is the design excavation line.
B-Line is the overbreak line.
R-denotes round bar, yield strength of the round bar is 280MPa.
D-denotes deformed bar, yield strength of the deformed bar is 500 MPa;
- Strength specification of concrete & shotcrete:
(1) Concrete class E: Cylinder specified compressive strength 24MPa at 28 days.
(2) Shotcrete: Cylinder specified compressive strength 25MPa at 28 days unless the slope of the portal, and 1 day aged shotcrete shall have strength above 10MPa as per contract.
- Other notes see sheet 1.

REFERENCE DRAWINGS

UTI-C-150-CVL-DG-43002	Surrounding Rock Stability Calculation of Adit No.3
UTI-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UTI-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UTI-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

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PROJECT TITLE
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OWNER'S ENGINEER
TRACTEBEL
CONSULT

CONTRACTOR
DOOSAN Doosan Heavy Industries & Construction

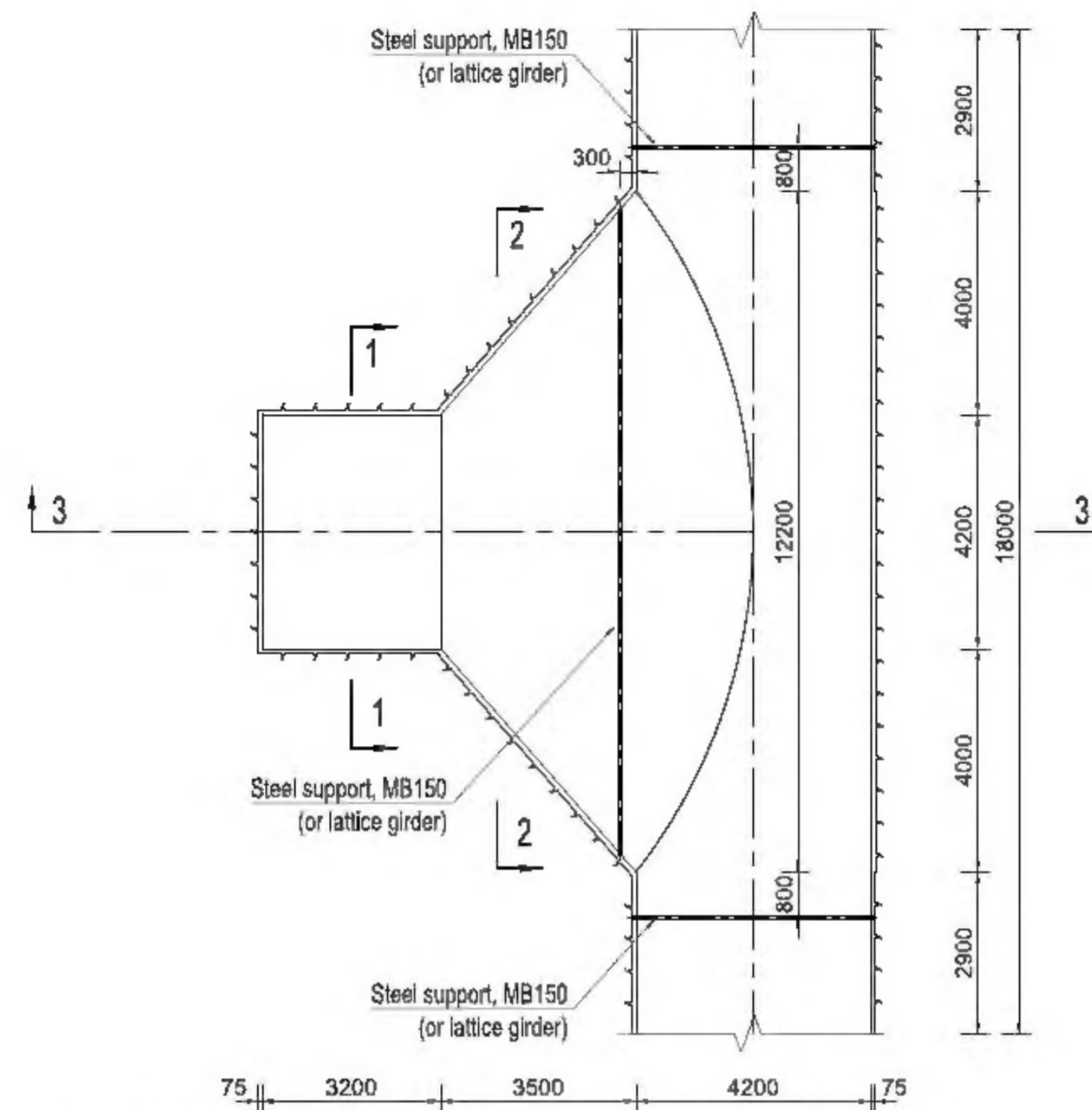
DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF ADIT NO.3 (2/5)

INDEX	DRAWING NUMBER	SHEET NO.	REV. NO.
A	UTI-C-150-CVL-DG-43004-2	2 OF 5	G

A1 (594 x 841 MM) 1

PLAN OF TURNING ADIT (ROCK CLASS III)

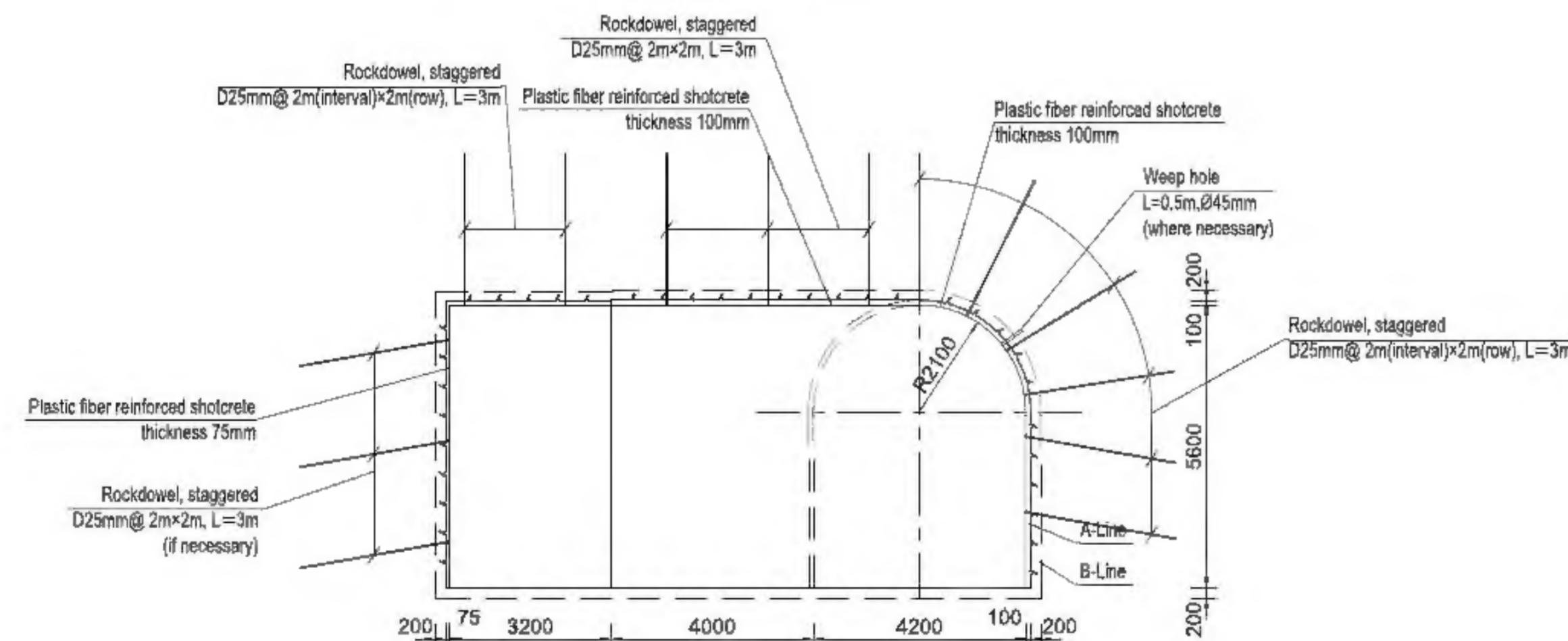
SCALE 1:100



Note: the steel ribs at the start and end of the turning bay are only required in Class III, IV.

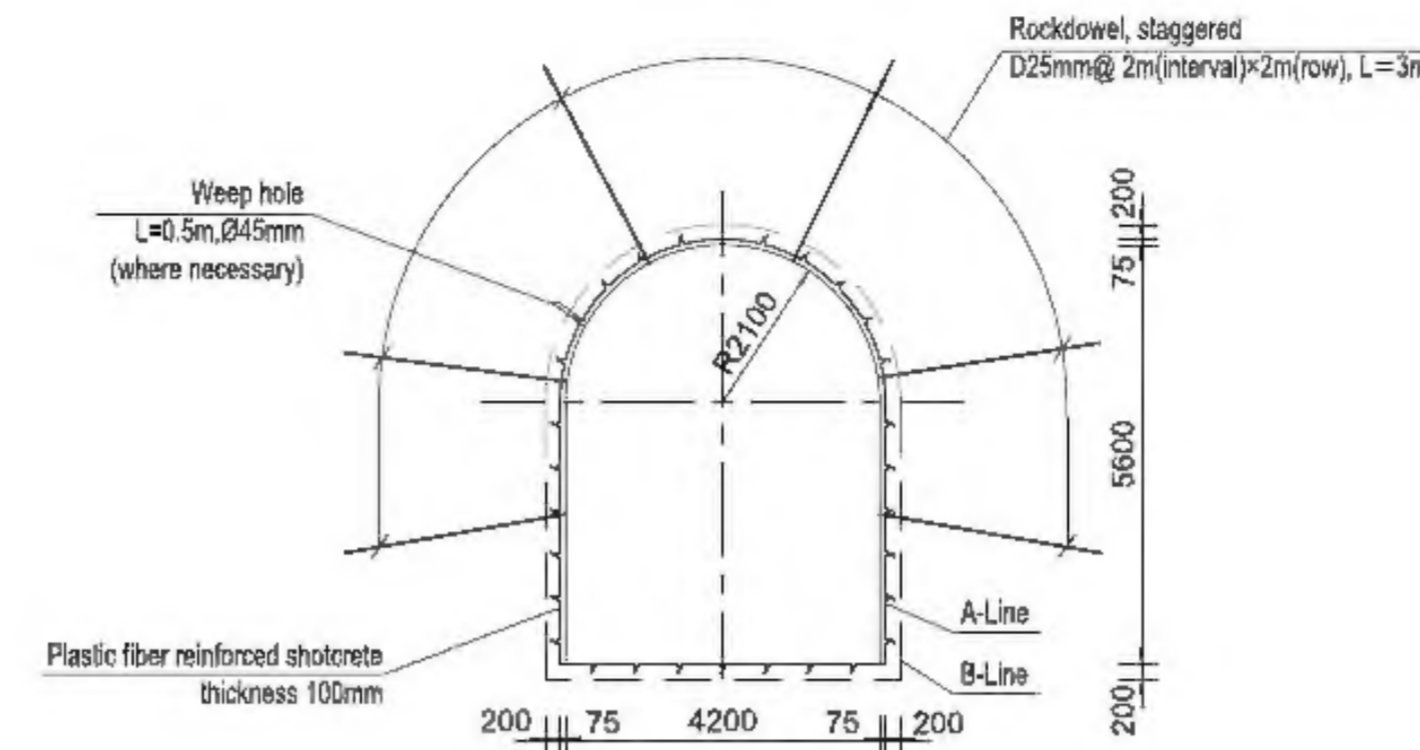
SECTION 3-3

SCALE 1:100



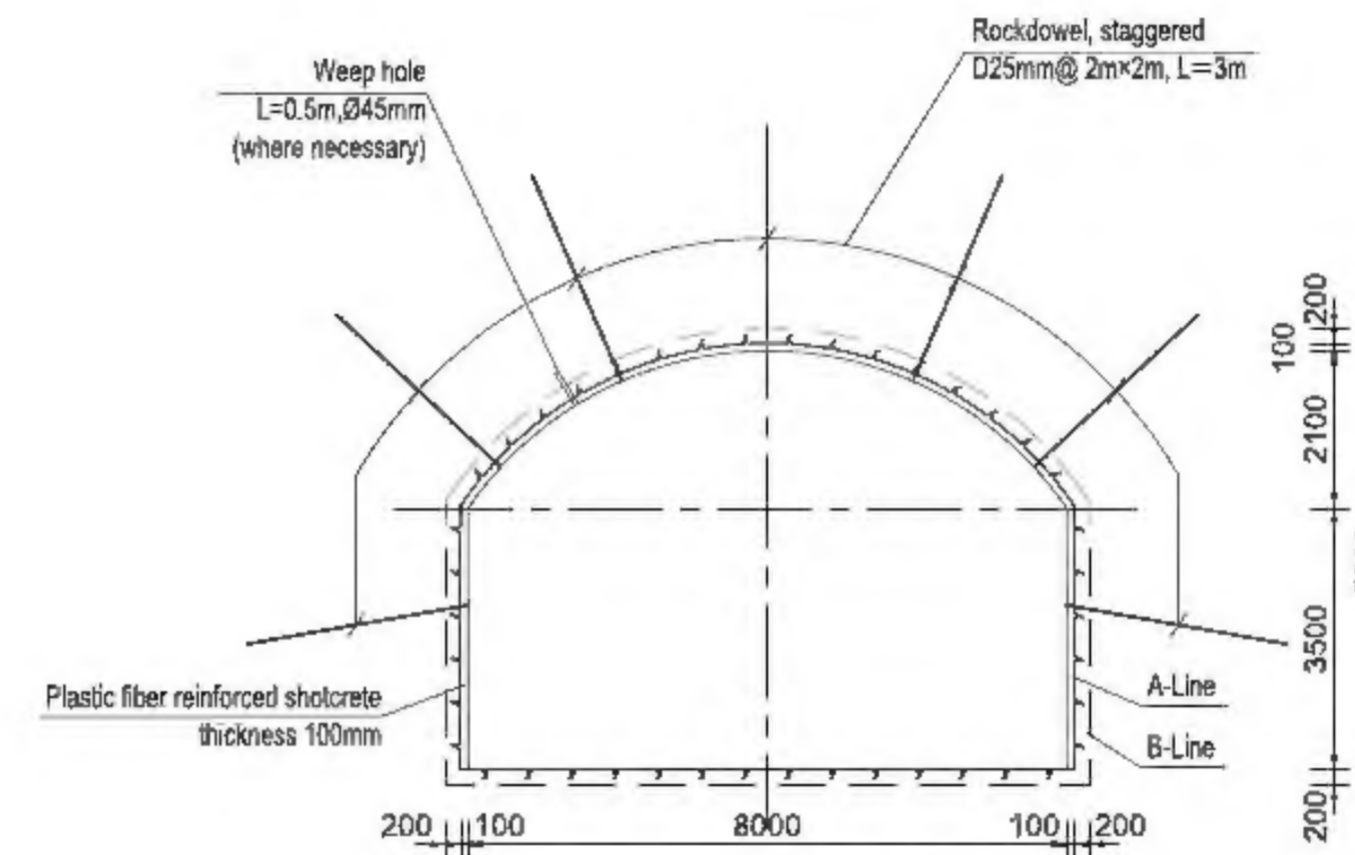
SECTION 1-1

SCALE 1:100



SECTION 2-2

SCALE 1:100



TUNNEL SUPPORT PATTERN

Support pattern	Class I	Class II	Class III	Class IV	Class V
Rock mass quality	$Q > 40$	$10 < Q < 40$	$4 < Q < 10$	$1 < Q < 4$	$Q < 1$
Rock dowel	Spot bolting D25, L=3m (where necessary)	Pattern bolting D25@2.5, L=3m (in tunnel roof)	Pattern bolting D25@2.0m, L=3m (alternative)	Pattern bolting D25@1.5m, L=3m (alternative)	Pattern bolting D25@1.0m, L=3m (alternative)
Shotcrete	--	T=50mm(PFRS)	T=75mm(PFRS)	T=120mm(PFRS)	T=160mm(PFRS)
Steel support	--	--	--	MB150@1.0m or (lattice girder @1.0m) (where necessary)	MB150@1.0m or (lattice girder @1.0m)
Supplementary support	--	--	--	Forepoling grouted dowel, D25@0.4m, L=6m (where necessary)	Forepoling grouted dowel, D25@0.4m, L=6m
Unsupported span for shotcrete(m)	--	8	2	1.5	0.5-1.0
Unsupported span for rock dowel(m)	--	6	4	3	0.5-1.0
Unsupported span for steel support(m)	--	--	--	0.5-1.0	0.5-1.0
Excavation span(m)	3	3	2	1.0-1.5	0.5-1.0
Excavation method	Blasting/Mechanically				Mechanically

1:100 0 1 2 3 4 5m

NOTE

1. This set of drawings are the excavation and initial support of adit No.3.
2. The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
3. Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS





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SYMBOL AND LEGEND

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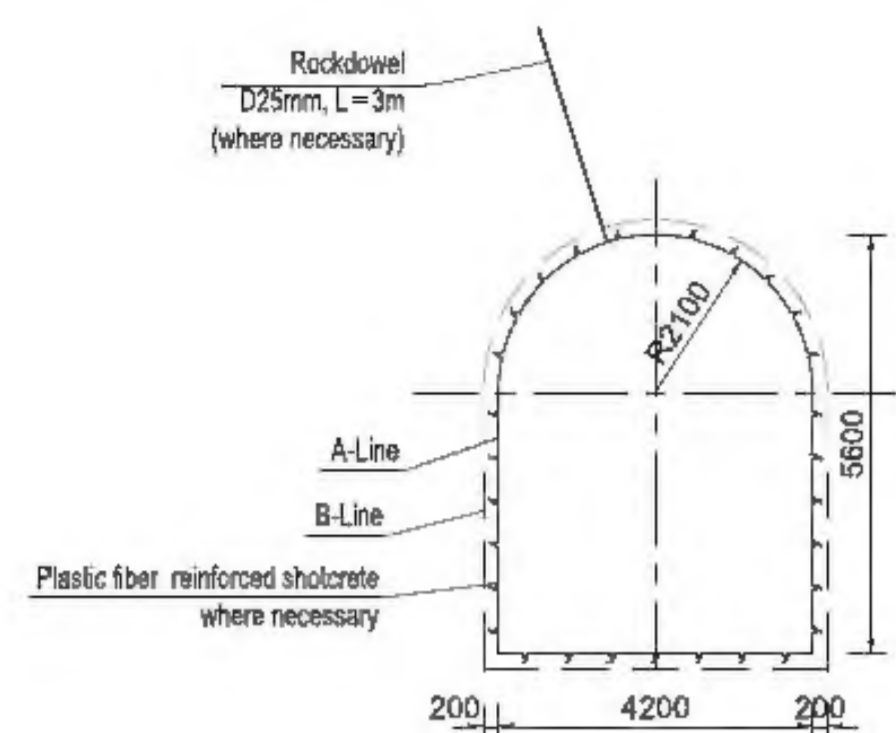
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PROJECT TITLE	Upper Trishuli-1 HEP (216MW)					
OWNER						
OWNER'S ENGINEER	 					
CONTRACTOR						
DRAWING TITLE	EXCAVATION AND INITIAL SUPPORT DRAWINGS OF ADIT NO.3 (3/5)					
INDEX	DRAWING NUMBER	SHEET NO	REV. NO.			
A	UTI-C-150-CVL-DC-43004-2	3 OF 5	G			

A1 (594 x 841 MM) 1

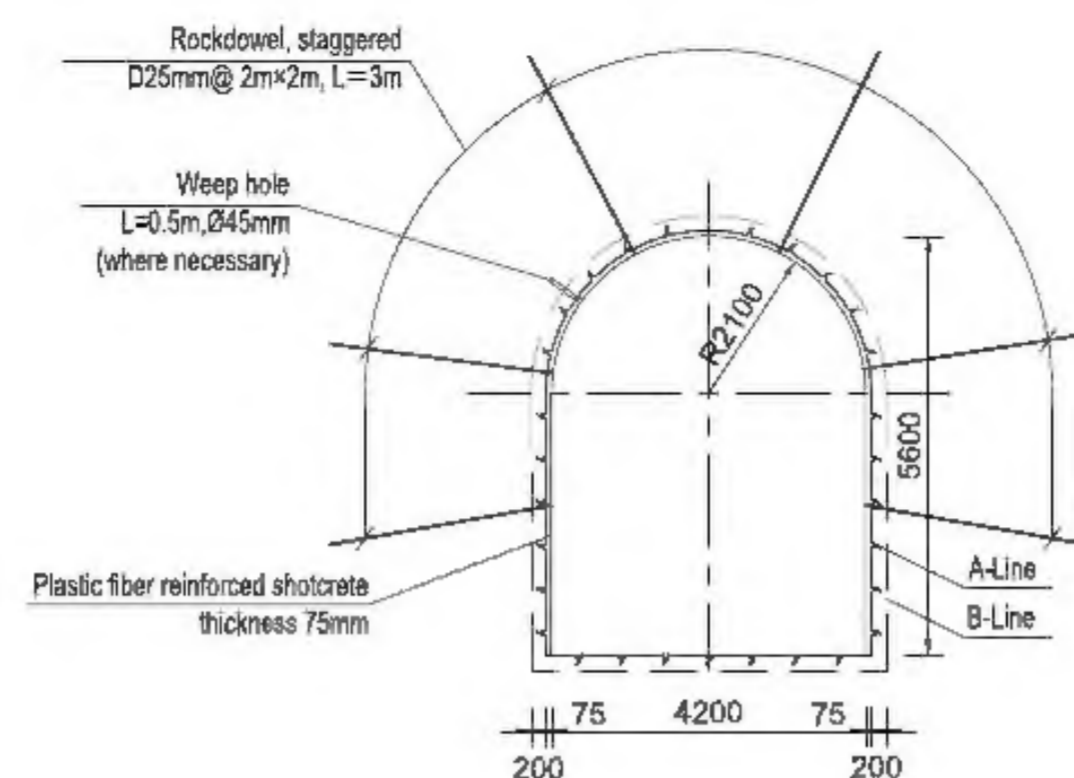
SUPPORT TYPE OF ROCK CLASS I

SCALE 1:100



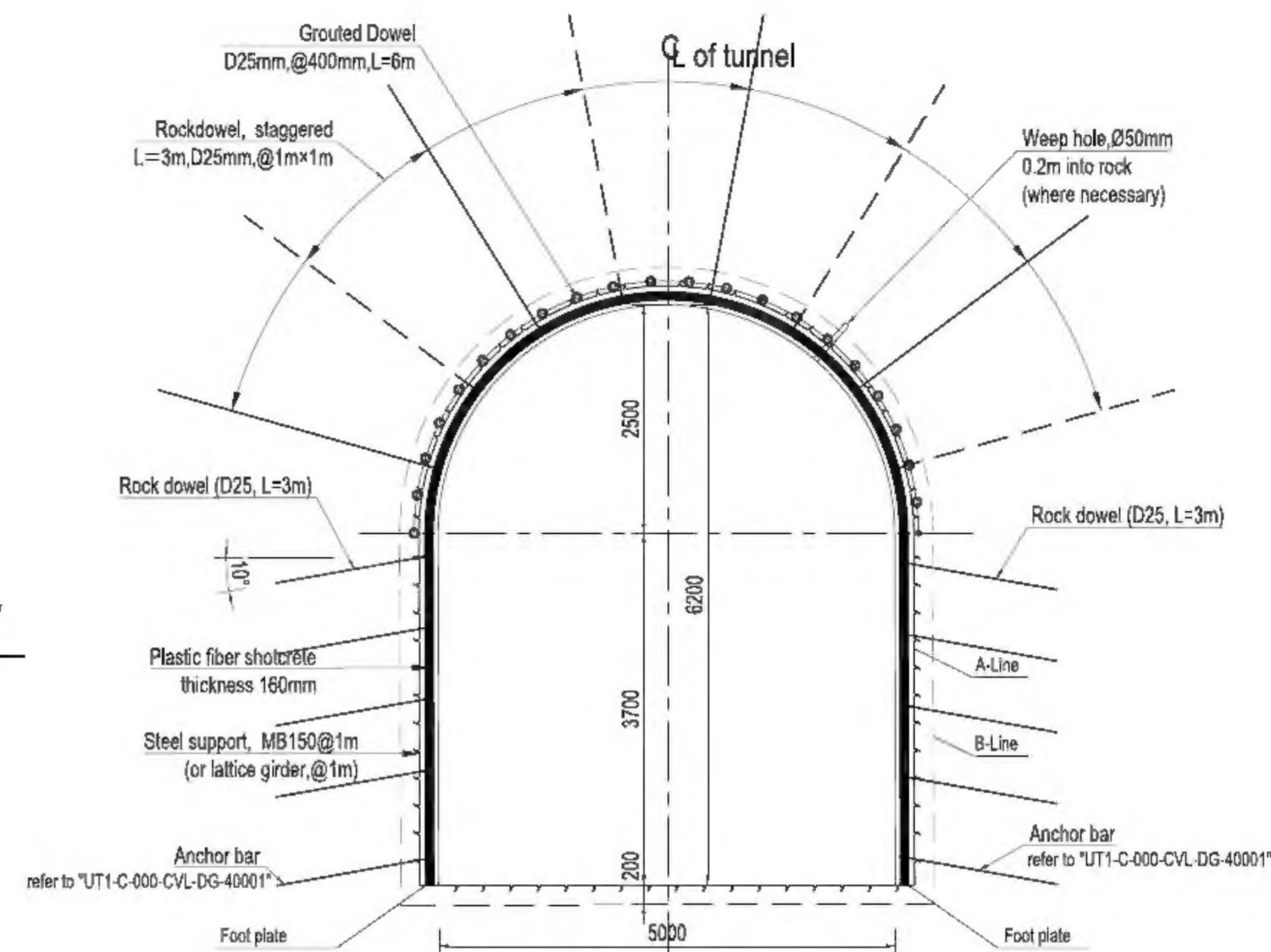
SUPPORT TYPE OF ROCK CLASS III

SCALE 1:100



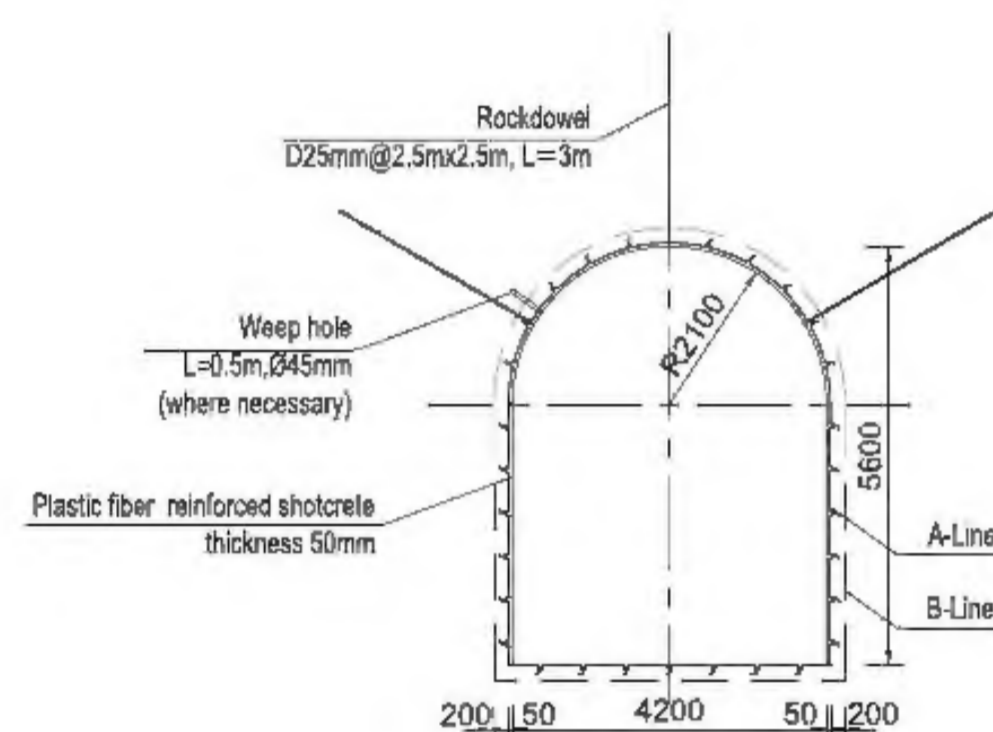
ACROSS SECTION OF FOREPOLING

SCALE 1:100



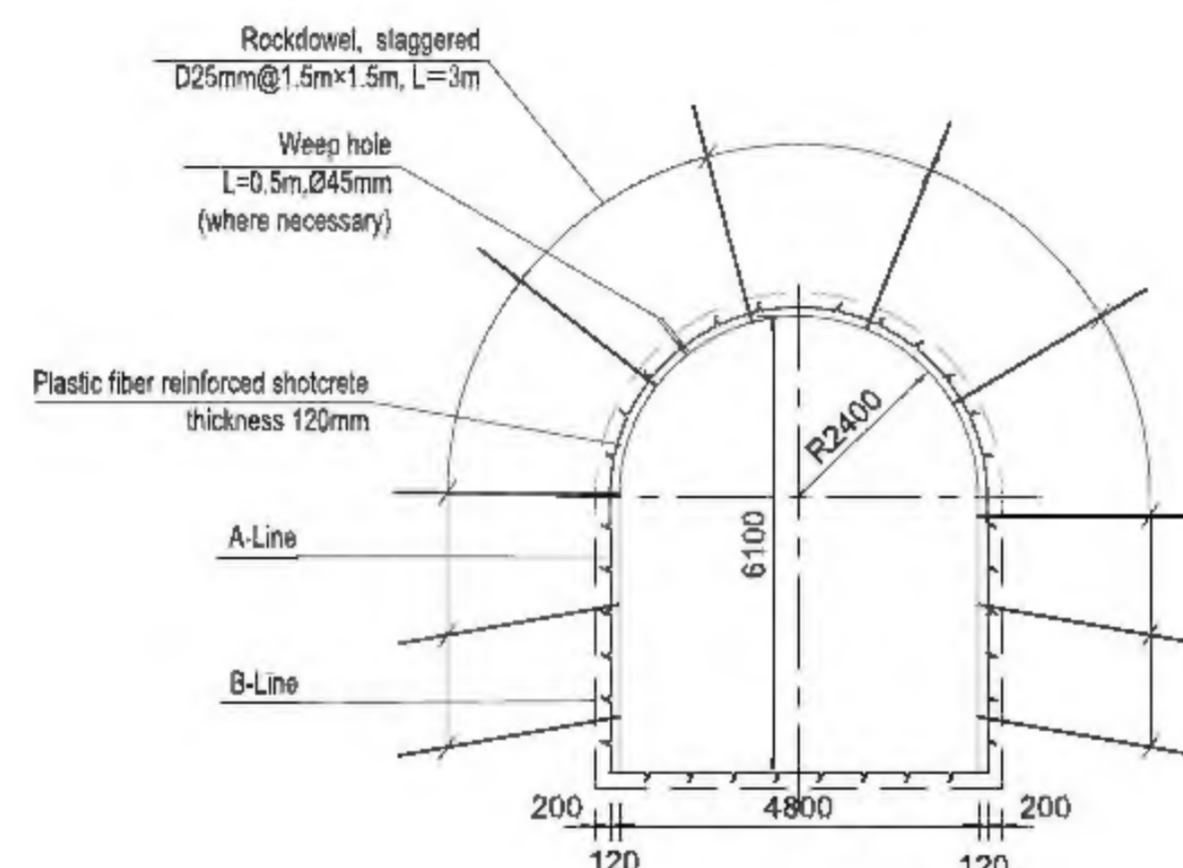
SUPPORT TYPE OF ROCK CLASS II

SCALE 1:100



SUPPORT TYPE OF ROCK CLASS IV

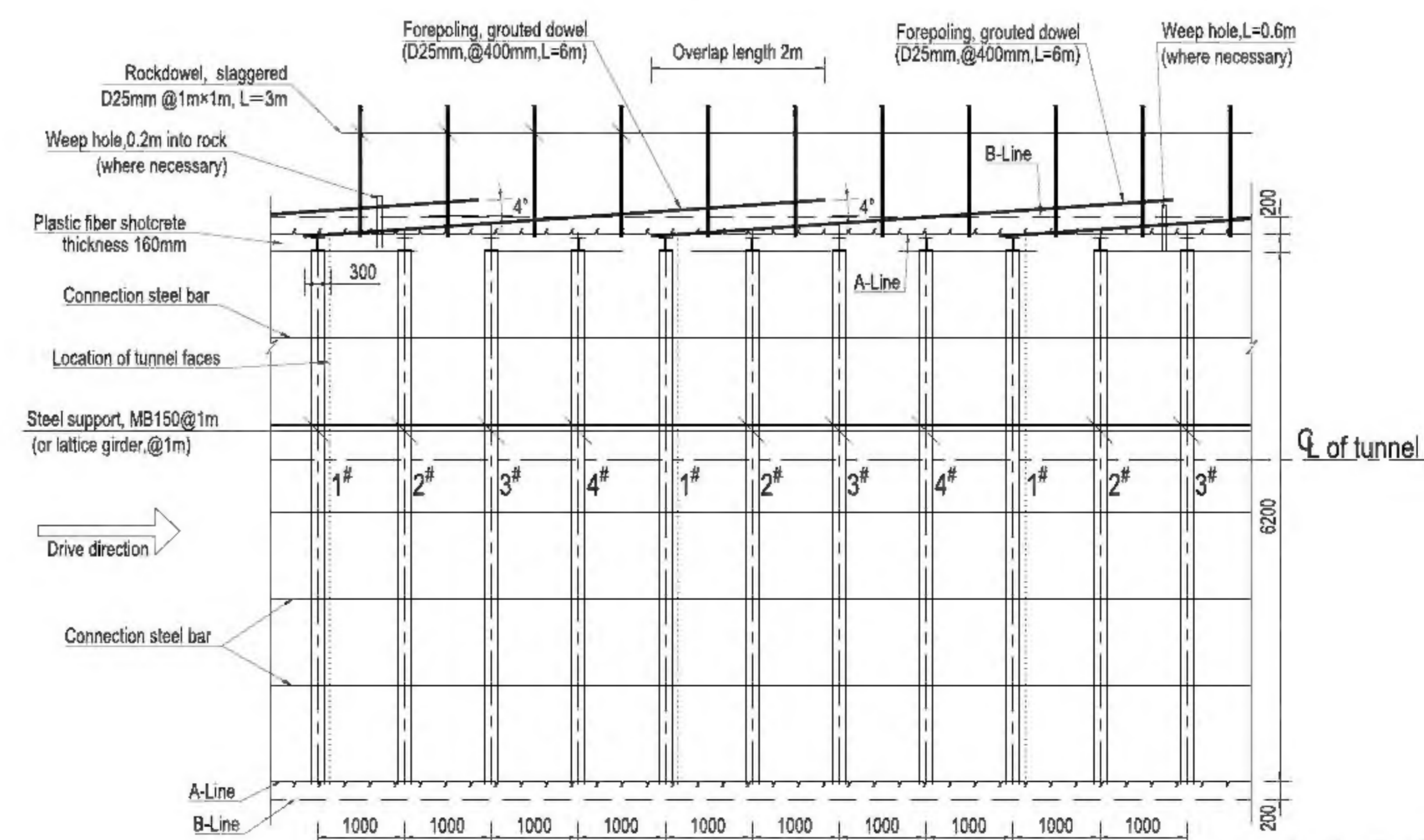
SCALE 1:100



LONGITUDINAL PROFILE OF FOREPOLING

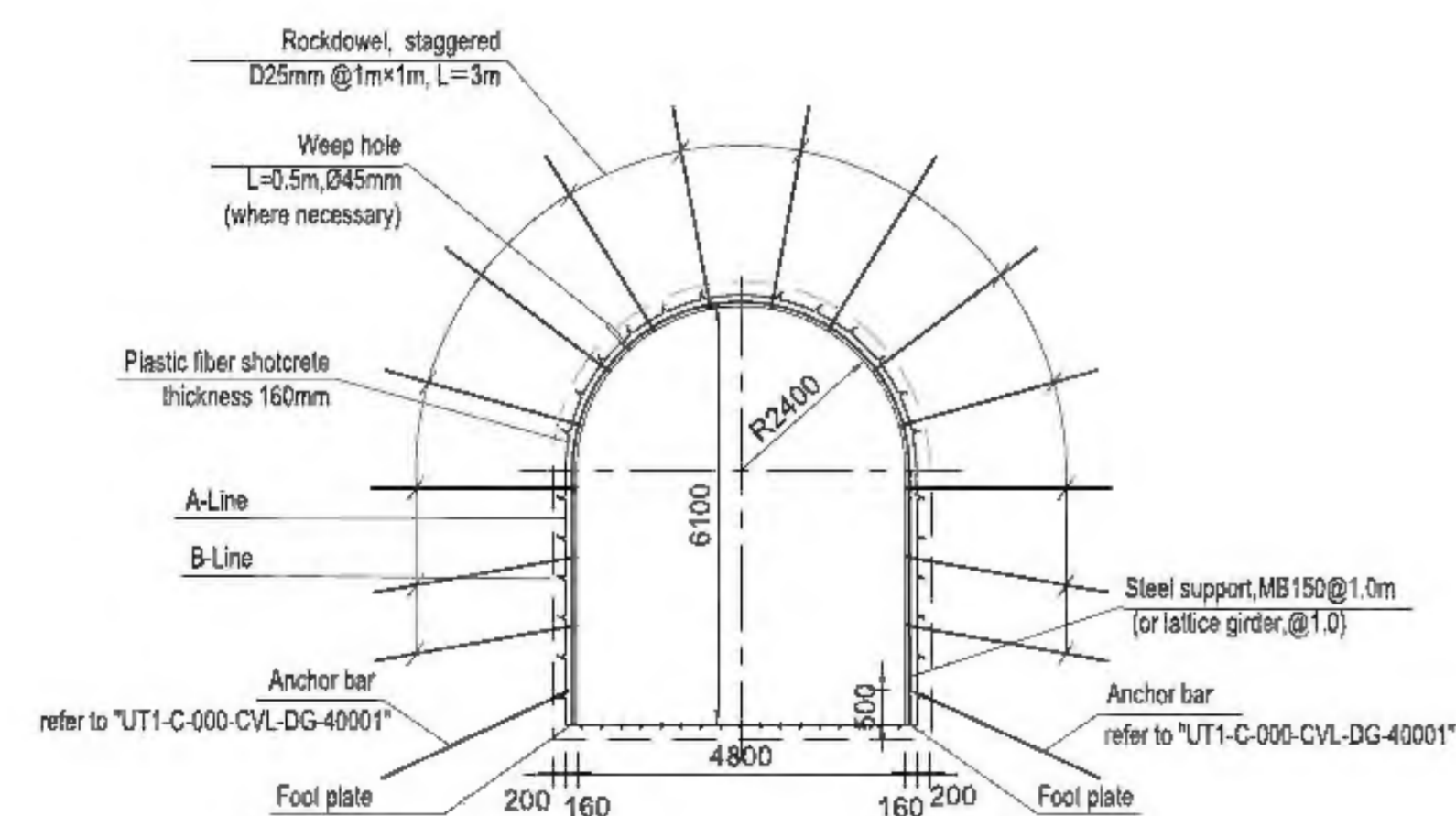
Applied to class V

SCALE 1:50



SUPPORT TYPE OF ROCK CLASS V

SCALE 1:100



NOTE

1. This set of drawings are the excavation and initial support of adit No.3.
2. The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
3. The canopy forepoling is mainly used in the tunnel section with poor surrounding rock geology, which should be used together with dowel and steel support (or lattice girder), and the spacing of dowel should be consistent with that of steel support.
4. The steel support (or lattice girder) to rock class IV is subjected to the exposed geological condition.
5. The excavation profile may need to be adjusted to a "saw-tooth profile" and size of ribs/girders may also be adjusted.
6. Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS

UTI-C-150-CVL-DG-43002	Surrounding Rock Stability Calculations of Adit No.3
UTI-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
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UTI-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

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PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NWEDC
NATIONAL WATERWAYS DEVELOPMENT CORPORATION LTD.

OWNER'S ENGINEER
TRACTEBEL
INGRADE
jade
CONSULT

CONTRACTOR
DOOSAN Doosan Heavy Industries & Construction

DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF ADIT NO.3 (4/5)

INDEX	DRAWING NUMBER	SHEET NO	REV. NO.
A	UTI-C-150-CVL-DG-43004-4	4 OF 5	G

A1 (594 x 841 MM) 1

Technical drawing of the headrace tunnel structure, showing a cross-section and elevation view.

Cross-section (Left):

- Adit No. 3 (4.2m x 5.6m)
- Steel support, MB150 (or lattice girder)
- Dimensions: 2500, 3500, 7210, 50

Elevation (Right):

- Headrace tunnel
- Dimensions: 2900, 3000, 4200, 3000, 2900, 16000
- Steel support, MB150 (or lattice girder)

Scale: 1:100

Technical drawing of a tunnel cross-section. The drawing shows a rectangular access passage (1750x1750) and a semi-circular main tunnel (7105 diameter). The drawing includes dimensions for the passage (1750x1750), the main tunnel (7105 diameter), and the surrounding rock (7230). It also shows the thickness of the plastic fiber reinforced shotcrete (50mm) and the staggered rock dowels (D25mm@2m).

SECTION 4-4

SCALE 1:100

The diagram illustrates a cross-section of a bridge pier, labeled SECTION 4-4. The structure features a semi-circular arch. Key dimensions and details include:

- Overall Height:** 5600mm.
- Base Width:** 4200mm.
- Arch Radius:** R2100.
- Base Dimensions:** 200mm (left), 50mm (left of arch), 4200mm (total), 50mm (right of arch), 200mm (right).
- Arch Height:** 50mm (top of arch), 5600mm (total height).
- Structural Details:**
 - Weep hole:** L=0.5m, Ø45mm (where necessary).
 - Rock/dowel, staggered:** D25mm@2m(interval)×2m(row), L=3m.
 - Plastic fiber reinforced shotcrete (thickness 50mm):** Indicated on the base and sides.
 - A-Line** and **B-Line** are marked at the base.

Technical drawing of a cross-section of a bridge deck. The drawing shows a semi-circular arch structure. Key dimensions and labels include:

- Weep hole**: $L=0.5\text{m}$, $\text{Ø}45\text{mm}$ (where necessary)
- Rockdowel, staggered**: $\text{D}25\text{mm}$ @ $2\text{m} \times 2\text{m}$, $L=3\text{m}$
- Plastic fiber reinforced shotcrete thickness**: 80mm
- A-Line** and **B-Line** labels on the right side.
- Horizontal dimensions**: 200, 80, 7200, 80, 200
- Vertical dimensions**: 200, 80, 2100, 3500, 5600

A1 (594 x 841 MM) 1

